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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,424	08/05/2003	Mohammad M. Samii	200205843-6	7791

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/634,424	SAMII, MOHAMMAD M.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/165266.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 10, 13-14, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maru et al. (US 5877784) in view of Fujii et al. (US 5053789).

#### **Referring to claims 1, 23:**

Maru et al. discloses a printing apparatus having a printhead assembly comprising:

a plurality of thermal inkjet printing elements (*FIG. 11, element 101*), each of the printing elements configured to cause forming image when the printing element is activated;

a plurality of latches (*FIG. 11, element 104*); and

a plurality of image data receiving units (*FIG. 11: The shift register 105 includes a plurality of S/R cells for receiving and storing image data from the data input 201*) each is coupled to one of the printing elements via one of the latches and a multi-transistor amplifier (*FIG. 11: Each S/R cell is coupled to an associated printing element 101 through an associated latch 104 and an associated dual-transistor amplifier 102*) (**Referring to claims 4, 23**), each configured to generate an activation signal that causes the printing element to be activated when the image data, transmitted from an external device through a wiring connection, is received.

Maru et al., however, does not disclose wherein the plurality of image data receiving units is a plurality of junction photosensors/photodiodes/phototransistors (**Referring to claims 2-**

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3), each configured to generate an activation signal that causes an associated printing element to be activated when the photosensor is illuminated by a light source and positioned substantially adjacent to the printing element that it is coupled to (**Referring to claim 14**). In other words, Maru et al. does not disclose wherein the printhead assembly is in communication with the external device through an optical connection.

Fujii et al. discloses a thermal printing apparatus having a printhead assembly (*FIG. 1, element 3*) that is in data communication with an external device through an optical connection (*FIG. 1*), wherein the printhead assembly including a plurality of junction photosensors, photodiodes (*FIG. 2, element D*), or phototransistors (*FIG. 2: The combination of a diode D and the associated transistor Tr*), each configured to generate an activation signal that causes an associated printing element (*FIG. 2, element H*) to be activated when the photosensor receives optical image data illuminated by a light source (*FIG. 1, element 1*) and positioned substantially adjacent to the ejection element that it is coupled to (*FIG. 1-2, elements 3a-b*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify Maru's printing apparatus to include appropriate optical elements so the printhead assembly can be in optical communication with other components rather than by wiring connection and to include a plurality of junction photosensors into the printhead assembly for receiving optical image data rather than the S/R cells as disclosed by Fujii et al. The motivation for doing so would have been well known in the art to avoid many problems due to wiring connection such as disconnection, short circuit, or attenuation (due to resistance of the wiring). (*The applicant please be advised that a suggestion/motivation need not be expressly stated in one or all of the references used to show obviousness, but can be from common*

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*knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference (In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)).*

**Maru et al. also discloses the following claimed invention:**

**Referring to claim 13:** wherein the printhead assembly is a page-wide-array printhead assembly (*column 10, lines 49-55*).

2. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maru et al. (US 5877784) in view of Fujii et al. (US 5053789), as applied to claim 4, and further in view of Millman et al. (Microelectronics, Second Edition, McGraw-Hill, Inc, 1987).

Maru et al., as modified, discloses the claimed invention as discussed above and also discloses wherein each amplifier comprises first and second bipolar junction transistors (BJT) (*FIG. 11, element 102*), a latch (*FIG. 11, element 104*) being coupled to the gate/base of the first transistor of the amplifier, and wherein the second transistor of each amplifier is coupled to the first transistor of the amplifier and to one of the ejection elements (*FIG. 11, element 101*), the second transistor of each amplifier configured to provide a drive signal for activating the ejection element coupled to the second transistor when the first transistor of the amplifier is turned on (*FIG. 11*).

However, Maru et al., as modified, does not disclose wherein the transistors are field effect transistors (FET), each including a gate, a source, and a drain.

Millman et al. teaches that an important feature of field-effect transistors, each including a gate, a source, and a drain (*page 135, fourth paragraph and FIG. 4-3*), is that it is often simpler

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to fabricate and occupies less than space on a chip than does a BJT in order to increase component density in a very large scale integration (*page 133, second paragraph*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the amplifier disclosed by Mura et al., as modified, to use the field-effect transistors rather than bipolar junction transistors (BJT) as disclosed by Millman et al. The motivation for doing so would have been because it is simpler to fabricate and occupies less than space on a chip, so it is able to increase component density to build a very large scale integration as taught by Millman et al. (*page 133, second paragraph*).

3. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maru et al. (US 5877784) in view of Fujii et al. (US 5053789), as applied to claim 1, and further in view of Sueoka et al. (US 6024439).

Maru et al., as modified, discloses the claimed invention as discussed above except wherein the plurality of ejection elements are organized into four page-wide-arrays of ejection elements and wherein the ejection elements are piezoelectric inkjet element.

Sueoka et al. discloses a printing apparatus having a printhead assembly including a plurality of ejection elements that are either thermal ejection elements or piezoelectric ejection elements (*column 9, lines 7-15*) and organized into four page-wide-arrays of ejection elements (*FIG. 10, elements 10B, 10M, 10Y, 10C*) for respectively ejecting four color inks.

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printhead assembly disclosed by Maru et al., as modified, to organize the ejection elements into four page-wide-arrays of ejection elements as disclosed by

Sueoka et al. The motivation for doing so would have been able to respectively eject four different color inks to form color images as taught by Sueka et al. (*column 8, lines 15-25*).

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maru et al. (US 5877784) in view of Fujii et al. (US 5053789), as applied to claim 1, and further in view of Tamura et al. (US 4794463).

Maru et al., as modified, discloses the claimed invention as discussed above except wherein the plurality of printhead fluid ejection elements is formed on a glass substrate.

Tamura et al. discloses an ink jet system having a printhead assembly including a plurality of printing elements that are formed on a glass substrate (*column 19, line 64 to column 20, line 13*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printhead assembly disclosed by Maru et al., as modified, to form printing elements on a glass substrate as disclosed by Tamura et al. The motivation for doing so would have been to ensure the insulation for the ink jet head as taught by Tamura et al. (*column 4, lines 5-10*).

#### ***Response to Arguments***

Applicant's arguments, filed 01/11/2006, with respect to the 103 rejections of Fujii et al. in view of Sueoka et al., and of Tamura et al. in view of Fujii et al. have been fully considered and are persuasive. The above rejections have been withdrawn.

However, Applicant's arguments with respect to the 103 rejection of Mura et al. in view of Fujii et al. have been fully considered but they are not persuasive. The applicant argued that Mura et al. and Fujii, either alone or in combination, disclosed a latch, but not a junction

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photosensor coupled to an ejection element via a latch. The examiner disagrees with the applicant's argument because Mura et al. and Fujii in combination discloses such claim limitation. As discussed in the first rejection, the suggested modification will result of inserting Fujii's photosensors into Mura's ink jet chip as a receiving image data element that is connected to Mura's printing element (101) via a latch (104).

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

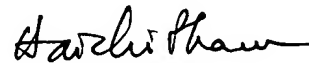


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
01/25/2006



HAI PHAM  
PRIMARY EXAMINER